

THE IDENTITY OF *PETROLISTHES MARGINATUS*  
STIMPSON, 1859, AND THE DESCRIPTION OF  
*PETROLISTHES DISSIMULATUS*, N. SP.  
(CRUSTACEA: DECAPODA: PORCELLANIDAE)

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*Abstract.*—*Petrolisthes marginatus*, briefly described by Stimpson, but erroneously illustrated as such by Benedict, is shown to be a composite of three nominal species, *Petrolisthes marginatus* s. s., *Petrolisthes cessacii* (A. Milne Edwards) a junior subjective synonym, and an undescribed species (*P. marginatus* sensu Benedict). The latter form is described and illustrated as *Petrolisthes dissimulatus*.

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*Petrolisthes marginatus* Stimpson, 1859, is a member of a genus of cryptic, often fast-moving porcellanid crabs that inhabit crevices and interstices in reefs and other hard, more or less permanent substrata. Stimpson briefly described but did not illustrate *P. marginatus*, using a single specimen collected at Barbados by a Mr. Gill. Stimpson's original specimen was presumably destroyed in the Great Chicago Fire (see Evans 1967), and apparently no syntypic material was deposited by Stimpson in any other museums.

*Petrolisthes marginatus* was nevertheless considered to be well-characterized, based on a combination of Stimpson's brief original description, plus a subsequent illustration asserted to be this species by Benedict (1901). The species is tropical, but not very common, being recorded from Fernando de Noronha (Pocock 1890), the Caribbean Sea (Young 1900), a few other localities in the western Atlantic (Haig 1956), and eventually but erroneously from several areas in the tropical eastern Pacific (Haig 1960). Specimens from the latter region were re-examined by Chace (1962) and placed in a new species, *Petrolisthes haigae*, which became the trans-Panamanian geminate form of *P. marginatus* sensu Stimpson (see below).

Benedict's (1901) illustration that he attributed to *P. marginatus* was that of a porcellanid collected at Ponce, Puerto Rico. Although his perfunctory description added little to Stimpson's sparse characterization, the accompanying figure was more detailed, and showed a small crab with quadridentate cheliped meri, lacking walking legs, and bearing two small clearly visible epibranchial spines. These spines had not been mentioned by Stimpson in his original description, but later authors (e.g. Schmitt 1924a, b, 1935; Chace 1956, 1962; Gore 1974) followed Benedict's lead and used them as criteria in identifying, or distinguishing between *P. marginatus* sensu Benedict, and other closely related but single-spined congeners such as *Petrolisthes amoenus* (Guérin, 1855), *Petrolisthes haigae* Chace, 1962, or *Petrolisthes cessacii* (A. Milne Edwards, 1878).

*Petrolisthes cessacii* has long been considered to be closely related to *Petrolisthes marginatus*. The original description of the former by A. Milne Edwards, as *Porcellana Cessacii*, was also without an illustration and characterized a crab

attaining a relatively large size ( $17 \times 16$  mm, cl  $\times$  cw), possessing a strongly advanced frontal region produced into a point ("affecte la forme d'un bec"), a cheliped carpus having three or four denticulations on its anterior margin and a large spine terminating its posterior margin. There was no mention of any epi-branchial spination, and the remaining characters in the description could easily have been applied to any of several species of porcellanid crabs known at that time. For the purposes of this paper, however, the large size, advanced front, tri- or quadridentate cheliped carpus with a strong posterior spine provide evidence of similarity with *Petrolisthes marginatus* Stimpson (see below).

Balss (1914) provided a brief figure of *P. cessacii*, but Chace's (1956) illustration of the species was by far the most detailed. Literature records from Chace's study suggested that *P. cessacii* was a rather common porcellanid crab, apparently restricted to the tropical-subtropical eastern Atlantic Ocean. However, Gore (1974) noted a range extension for the species to the western Caribbean Sea, and in the same study placed Pocock's (1890) specimens of *P. marginatus* from Fernando de Noronha, Brazil, into synonymy with *P. cessacii*. Gore considered Fernando de Noronha as the first, albeit "misidentified," western Atlantic record for Milne Edwards' species. This action followed Coelho (1970) who previously had listed *P. cessacii* from the coast of Brazil without further comment. As a comparison of the illustrations provided by Chace and by Gore shows, the western African and western Caribbean forms are quite similar.

Most recently, R. B. Manning and F. A. Chace (in prep.) identified some specimens of porcellanid crabs collected from Ascension Island in the South Central Atlantic as *P. marginatus*. A comparison of this material with specimens of *P. cessacii* convinced them (in litt.) that *Petrolisthes cessacii* (A. Milne Edwards, 1878) was a junior synonym of *Petrolisthes marginatus* Stimpson, 1859. This being so, specimens identified as *P. cessacii* from Brazil (Coelho 1970; Coelho and Araujo Ramos 1972), Colombia (Werding 1977), the western Caribbean Sea (Gore 1974), and the coast of Mexico (Rickner 1975) were probably *P. marginatus* as well. What was more important, however, was that the specimen reported and illustrated by Benedict (1901) as *P. marginatus*, and perpetuated as such by subsequent authors, was now seen to differ substantially from Stimpson's description of the species, and because it was misidentified it would require a name.

Manning and Chace's conclusions were briefly incorporated in a report on Central American Porcellanidae by Gore (1982), in which the first occurrence of *P. marginatus* on the Caribbean coast of Panama was noted. In the present report, I provide a revised synonymy for *Petrolisthes marginatus* Stimpson, expand Stimpson's original description by including Chace's (1956) diagnosis for *P. cessacii*, and give a detailed description and illustration for the new species previously misidentified by Benedict.

In the taxonomic treatment that follows, carapace length (cl) precedes carapace width (cw) measured in mm across the longest or widest parts of the cephalothorax. Paratypic material of the new species from Colombia, part of the personal collection of Dr. Bernd Werding, was returned to him; the remaining paratypic and holotypic material has been returned to the National Museum of Natural History, Washington, D.C. Repository abbreviations follow the appropriate material and are explained in the Acknowledgment section.

*Petrolisthes marginatus* Stimpson, 1859

## Fig. 1

*Petrolisthes marginatus* Stimpson, 1858:227 [nomen nudum]; 1859:74 [p. 28 on separate].—Pocock, 1890:513.—Young, 1900:394.—Haig, 1956:26 [in part, including color notes and reference to Buccoo Reef specimen]; 1962:176 [in part, 1 ♀, "Danish West Indies"; not Virgin Islands specimens].—Gore, 1982:17. Not Nobili, 1897:4 [= *Petrolisthes armatus* (Gibbes, 1850), *fide* Nobili, 1901:12].

*Porcellana Cessacii* A. Milne-Edwards, 1878:229 [p. 10 on separate].

*Petrolisthes Cessaci*.—A. Milne Edwards and Bouvier, 1900:346.

*Petrolisthes cessaci*.—Balss, 1914:101, fig. 6.—Lebour, 1959:128, 136, fig. 10 [megalopa, identification by implication].<sup>1</sup>—Gauld, 1960:64.

*Petrolisthes Cecoci*.—Balss, 1914:100 [erroneous spelling, legend, fig. 6].

*Petrolisthes cessacii*.—Sourie, 1954:84, 112, 236, 239, 253, 256, 294, 295, 304.—Chace, 1956:14, fig. 4A–E.—Holthuis and Manning, 1970:242 [discussion], 243.—Coelho, 1970:233 [listed].—Coelho and Araujo Ramos, 1972:173.—Gore, 1974:710, fig. 4; 1982:17 [discussion].—Rickner, 1975:163.—Werdning, 1977:176, 197, 199, fig. 19.

*Petrolisthes armatus*.—Miers, 1881:432.—Balss, 1922:108 [listed].—Haig, 1962:178 [discussion].—Coelho, 1966:55 [references to Pocock and Nobili].—Fauto-Filho, 1974:8. Not *Petrolisthes armatus* (Gibbes, 1850).

*Material*.—MEXICO: Vera Cruz, Isla de Lobos; coral reef; 8 June 1973; coll. J. A. Rickner 1 ♂; AHF 1974-9.—PANAMA (Atlantic): Golfo de San Blas, Pico Feo; *Thalassia* flat; 0-1 m; 7 Apr 1973; coll. Newman and party; 1 ♂, 1 ♀ ovigerous; USNM 292580.—OLD PROVIDENCE ISLAND; 13°31.55'N, 81°20.55'W; 0-1 m; 30 Jan 1972; R/V *John Elliott Pillsbury*, sta P-1350; 1 ♂, 1 ♀ ovigerous; IRCZM 89:3741.—Same station; 3 ♂♂, 1 ♀; UMML 32:5515.—Same station; 3 ♀♀ ovigerous; RMNH 30407.—Same locality; low cay; boulders; 0-1 m; 14 Dec 1980; coll. B. Werdning; 1 juvenile; personal collection.—COLOMBIA: Santa Marta, Aguja; Playa Brava; under stones; 1.5 m; Dec 1978; coll. B. Werdning; 2 ♂♂, 2 ♀♀ ovigerous; personal collection.—Same area; Morro Grande; intertidal, under stones; May 1980; coll. B. Werdning; 3 ♂♂, 9 ♀♀ (7 ovigerous); personal collection.—Same area; Burrucuca; intertidal, among stones; 12 Jul 1976; coll. B. Werdning; 1 ♂, 1 ♀; personal collection.—Same locality; shore; Nov 1976; coll. B. Werdning; 1 ♂; AHF 726-01.—Same area; Punta de Betin; intertidal, among stones; Nov 1976; B. coll. Werdning; 1 ♂; personal collection.—Same area; Tagange; intertidal; Feb 1976; coll. B. Werdning; 1 ♂; personal collection.—Same area; Islas Rosario; May 1977; coll. B. Werdning; 1 ♂; personal collection.—CURACAO: southwest coast, west of Willemstad; under stones on shore; Jan-Feb 1957; coll. B. van Bergeyk; 1 ♀ ovigerous; LBH 1151.—Same; Fuik Bay;

<sup>1</sup> The megalopa Lebour attributed to *Petrolisthes cessacii* may not belong to this species, because the figure she provided shows no epibranchial spines. Megalopae of other *Petrolisthes* species that I have examined invariably exhibit such spines if they occur in the species in the adult stage. The megalopa illustrated by Lebour could therefore be one of several species of *Petrolisthes* which occur on, or in the vicinity of, the west African coast. On the possibility that Lebour overlooked the postlarval epibranchial spines, and without evidence attributing this megalopa to another species, I will provisionally maintain Lebour's identification within the synonymy of *P. marginatus*.



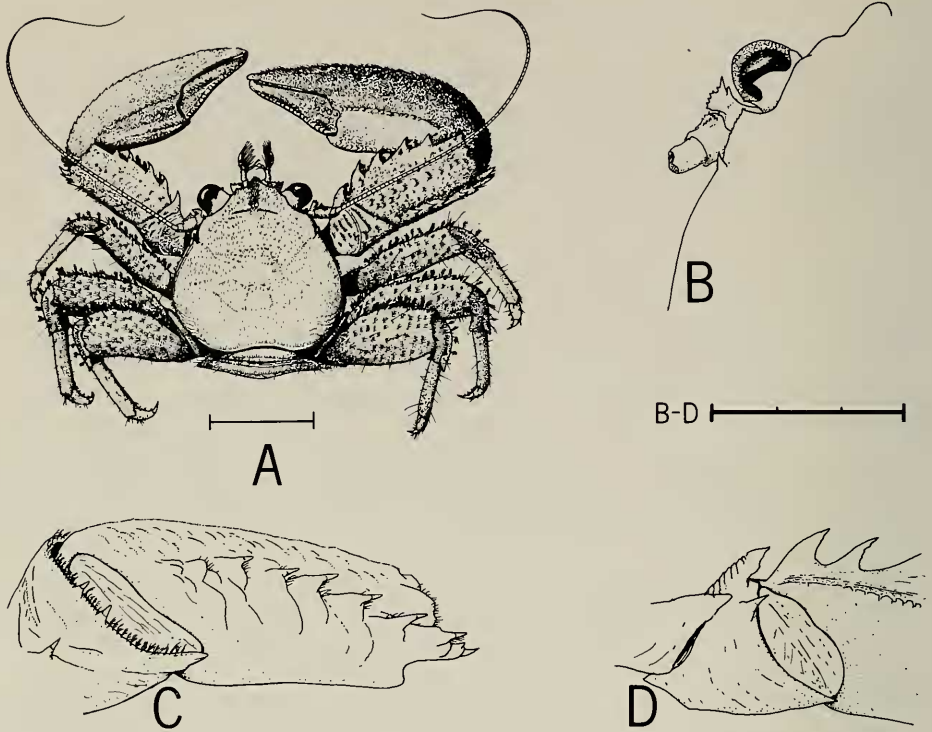


Fig. 1. *Petrolisthes marginatus*. A, Male, R/V *John Elliot Pillsbury*, Sta. P-1350, Old Providence Island, UMML 32:5515; B, Epibranchial and lateral margin of carapace, showing spination; C, Right cheliped, posteroventral view of marginal spines; D, Left cheliped, mesioventral view, note single meral spine. Scale A = 5 mm; B-D = 3 mm.

NW landing; intertidal, among stones; 0-1 m; 13 Jan 1957; coll. L. B. Holthuis; 1 ♀ crushed; LBH Nr 1051.—KLEIN BONAIRE: Old landing by Bonaire; coral debris on shore; 0-1 m; 17 Oct and 8 Nov 1930; coll. P. W. Hummelinck; 1 ♂, 1 ♀ crushed; PWH 1049a.—Same locality; east coast by landing place; rock, sand, tidal zone; 13 Sep 1948; coll. P. W. Hummelinck; 2 ♂♂, 1 ♀ ovigerous, 1 juvenile; PWH 1049a.—“DANISH WEST INDIES”: 15 Dec 1911; col.? C. Meng; 1 ♀; no other data; UZMC collection.—VIRGIN ISLANDS: St. John, Europa Bay; Feb 1959; coll. Randall and Kumpf; 1 ♂, 1 ♀ ovigerous; UMML 32:1595.—SABA, NETHERLANDS ANTILLES: E. Fort Bay; rocks, tidal zone and lower; 21 Jul 1949; coll. P. W. Hummelinck; 1 ♀ ovigerous; RMNH 8458.—AVES (Islote Aves): W of Dominica; N reef, rocks, tidal zone; 12 May 1949; coll. P. W. Hummelinck; 1 ♀; RMNH 8456.—TRINIDAD: Maracas Bay; southwest corner; intertidal; 18 Jul 1968; R/V *John Elliott Pillsbury*, sta P-701; 1 ♀ ovigerous; UMML 32:5481.—TOBAGO (British West Indies): Buccoo Reef; shore; 20 Apr 1939; *Velero III*, Hancock Expedition; 1 ♂; A41-39.—BRAZIL: Fernando (de) Noronha; coll. H. M. Ridley; no other data; 3 ♂♂; BMNH 1888.19.—WEST AFRICA: Senegal; Pointe des Almadies; 30 Jul 1973; 1 ♂, 1 ♀ ovigerous; MNHN

Ga 551.—Same; Gulf of Guinea; Fernando Poo; 3°45'N, 8°48'E; R/V *John Elliott Pillsbury*, sta P-258 shore; 15 May 1965; 2 ♂♂, 3 ♀♀; RMNH 23976.—Same; Annobon; 1°25'S, 5°38'E; R/V *John Elliott Pillsbury*, sta 271, shore; 19 May 1965; 7 ♂♂, 3 ♀♀ (2 ovigerous); RMNH 23975.

*Diagnosis*.—Carapace about as wide as long, covered with short pubescence, usually distinct, occasionally almost invisible, smooth except for few faint rugae posterolaterally; single sharp or blunt epibranchial spine, rarely with nub of second immediately behind. Front with prominent median lobe, projecting well beyond lateral lobes, latter nearly transverse, orbital margins oblique. Merus of chelipeds armed anteroventrally with single, usually acute spine; carpus with 3–5, usually 4, minutely serrate, spine-tipped, nearly equal-sized teeth; posterior margin with 2–6 oblique rugae produced apically into spines, strong, hooked, bifid spine at posterodistal angle. Chelae pubescent, bearing distinct granular ridge from dactylar to chelar bases, separating flattened upper part of manus from slanting outer part. Walking legs spinulose on anterior margins of meri, numbers ranging from 4–8, posterodistal angles produced into 1 or 2 teeth on legs 1 and 2, unarmed on walking leg 3. (Modified from Chace 1956:15.)

*Distribution*.—Western Africa from Cape Verde Islands to Annobon, on the mainland from Senegal to Ghana; Ascension Island, South Central Atlantic Ocean; Fernando de Noronha and São Luiz, Brazil, north to Trinidad, Tobago Island, vicinity of Santa Marta, Colombia, Curaçao, Bonaire, Old Providence Island, Panama, Mexico, and the northern Leeward Islands. In the littoral and shallow sublittoral to about 2 m.

*Remarks*.—With the placing of *Petrolisthes cessacii* into synonymy, *Petrolisthes marginatus* becomes another of a small group of essentially tropical porcellanid crabs in the genus *Petrolisthes* having amphi-oceanic or amphi-continental distribution. In addition to *P. marginatus*, now known from western Africa, Ascension Island, eastern South America and the Caribbean Sea, the group includes *Petrolisthes armatus* (Gibbes, 1850) from western Africa, eastern tropical North, Central and South America, and the tropical eastern Pacific; *Petrolisthes galathinus* (Bosc, 1802) from warm-temperate and tropical eastern North America, tropical Central and South America and the eastern Pacific; *Petrolisthes tonsorius* Haig, 1960 from the southwestern Caribbean Sea and tropical eastern Pacific; and *Petrolisthes tridentatus* Stimpson, 1859, from the Caribbean Sea, and tropical eastern South America and eastern Pacific. These species have presumably been able to cross oceanic or isthmian barriers either by dispersal or by vicariance events. The geographically separated populations at least have not undergone speciation recognizable through presently employed morphological criteria. At least 14 other species of *Petrolisthes* have extensive tropical distributions encompassing the western Indian Ocean and to either Japan or to Samoa or Hawaii in the Pacific Ocean (Haig 1964, 1974, in litt.).

The relegation of *P. cessacii* into junior synonymy with *P. marginatus* appears to be justified at present based on morphology. Whether the eastern and western Atlantic populations are reproductively isolated or will remain so, given the potential for long distance larval dispersal, remains uncertain. It would be extremely interesting, for example, to see if differences in larval morphology are exhibited among the African, Ascension Island, and western Atlantic populations.

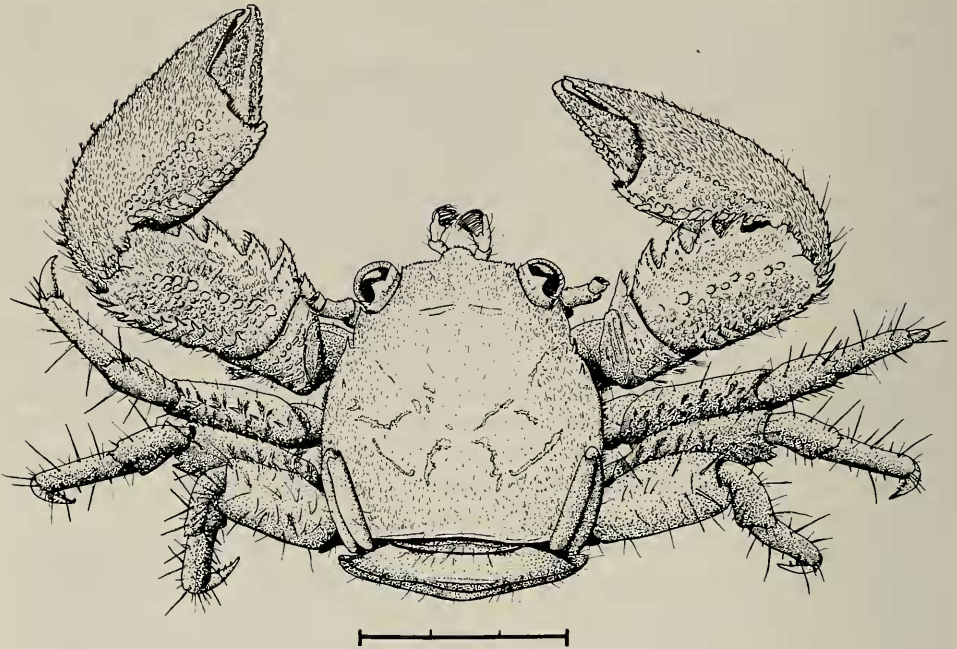


Fig. 2. *Petrolisthes dissimulatus*, holotype, ovigerous female, St. John, Virgin Islands, USNM 190893. Scale line = 3 mm.

*Petrolisthes dissimulatus*, new species

Figs. 2, 3, 4

*Petrolisthes marginatus*.—Benedict, 1901:134, pl. 3, fig. 1.—Schmitt, 1924a:73; 1924b:88; 1935:185, 187.—Boschma, 1931:374.—Chace, 1956: 24 [discussion]; 1962:622 [discussion].—Haig, 1956:17, 26 (in part, Curaçao specimen only); 1962:176 (in part, except 1 ♀, “Danish West Indies”).—Gore, 1974:711 [discussion]. Not *P. marginatus* Stimpson, 1859.

*Holotype*.—1 ♀, ovigerous; St. John, Virgin Islands, coral reef of lagoon point, west side of bay; 6 Apr 1937; W. L. Schmitt; USNM 190893.

*Paratypes*.—2 ♂♂, same data as holotype; USNM 190894.—PUERTO RICO: Playa de Ponce; 1899; USFC Steamer *Fish Hawk*; J. E. Benedict; 1 ♀; USNM 42351.—VIRGIN ISLANDS: St. Thomas; 10 Nov 1917?; no other data; UZMC collection.—“DANISH WEST INDIES”: 15 Dec 1911; C. Meng; 3 ♂♂, 2 ♀♀ (1 ovigerous); no other data; UZMC collection.—BARBADOS (Univ. Iowa Barbados-Antigua Exped.): 15 May 1918; W. L. Schmitt; 1 ♂, 2 ♀♀ ovigerous; USNM 57971.—Same; from coral head; 4 Jun 1918; W. L. Schmitt; 1 ♂; USNM 57972.—Same; Okra Reef; 13 May 1918; W. L. Schmitt; 1 ♂, 2 ♀♀ ovigerous, 1 cheliped; USNM 68648.—Same; 15 May 1918; W. L. Schmitt; 4 ♂♂, 1 ♀ ovigerous; USNM 68649.—Same; coral heads; 4 Jun 1918; W. L. Schmitt; 1 ♀; USNM 68650.—Same; old coral; 31 May 1918; W. L. Schmitt; 1 ♂, 2 ♀♀ ovigerous; USNM 68651.—CURAÇAO: Santa Marta Bay, by St. Nicolaas; coral blocks, open sea shore; 4 Feb 1957; coll. L. B. Holthuis; 1 ♂; LBH nr. 1083.—



Same; Piscadera Bay; sand and muddy sand with stones, algae, sponges, etc.; 0–1.5 m; 12 Nov and Dec 1956; coll. L. B. Holthuis; 1 ♂, 2 ♀ ♀ (1 ovigerous); LBH nr. 1002.—Same; Willemstad; strand of Marie Pompoen; among stones; 26 Dec 1956; coll. L. B. Holthuis; 3 ♂ ♂; LBH nr. 1028.—Same; Fuik Bay; NW landing; among stones; 0–1 m; 13 Jan 1957; coll. L. B. Holthuis; 6 ♂ ♂, 3 ♀ ♀; LBH nr. 1051.—Same; Vista Alegre; shore; 23 Apr 1939; “Velero III” Hancock Expedition; 1 ♀ ovigerous; USNM 98105 [A46-39].—COLOMBIA: Santa Marta; Aguja, Playa Brava; under stones; 1.5 m; Dec 1978; coll. B. Werding; 1 ♂, 1 ♀; personal collection.—Same; Islas Rosario; May 1977; coll. B. Werding; 1 ♂, 3 ♀ ♀ (2 ovigerous); personal collection.

*Measurements*.—Holotype,  $4.1 \times 4.0$  mm; paratype males,  $1.8 \times 1.8$  to  $6.5 \times 5.9$  mm; paratype females,  $3.1 \times 3.0$  to  $5.8 \times 5.4$  mm; ovigerous females,  $3.9 \times 3.6$  to  $5.7 \times 5.6$  mm.

*Diagnosis*.—Carapace rounded, smooth, pubescent; frontal region produced, trilobate, truncate anteriorly, prominent rounded denticulate median lobe, lateral lobes rectangularly rounded, serrated; orbital margin nearly normal to plane of lateral lobe; 2 epibranchial spines; manus broad, flattened, distinct longitudinal row of low tubercles extending along outer surface from dactylar to chela bases; merus with 2 sharp spines on anteroventral margin; carpus less than twice as long as wide, anterior margin with 4 serrated teeth having curved needlelike tips, posterior margin distal extension a single curved spine; walking legs spinulous on anterior margins of meri, posterodistal angles of legs 1 and 2 produced into sharp tooth, that of leg 3 unarmed.

*Description*.—Cephalothorax subcircular to slightly rectangular, longer than broad, flattened posteriorly, smooth, covered with fine pubescence predominantly on frontal, and anterior and posterior branchial areas; frontal region produced, trilobate, lateral lobes rectangularly rounded, minutely dentate especially at inner orbital angle, anterior margins nearly transverse, front thus appearing truncate; prominent, rounded, slightly deflexed, denticulate, median lobe, subequal to lateral lobes, shallow, median sulcus extending posteriorly to paired, slightly elevated protogastric lobes; orbital margin nearly straight, strongly concave posteriorly, forming parabolic arc, mesial and posterior margins appearing as rounded right angle; no supraocular spines or spinules, but minute denticles often present; outer orbital angle a sharp spine directed obliquely outward, followed by small serrations decreasing in size posteriorly; epibranchial angle with single large curved acute spine above, a second, often less acute, occasionally only a nub, immediately behind; remainder of carapace unarmed; lateral margins from epibranchial angle to posterior branchial region bearing thin ridge forming general dorsal outline of cephalothorax.

First movable antennal article with large, lamellar projection bearing several smaller teeth leading to strong single, or bifid, spine at tip, second with longitudinal row of small acute conical denticles or tubercles, third smooth, rounded; flagellar articles lightly setose.

Third maxilliped ischium exhibiting several raised, granular, transverse ridges, these appearing more like rugae on merus; mesial triangular projection of latter with distinct spinule at apex; remaining articles lightly rugose or smooth.

Cheliped merus rough, granular, large serrated, spinelike tooth on anterior margin, followed by pair of small, curved spinules on posterodorsal margin, sec-

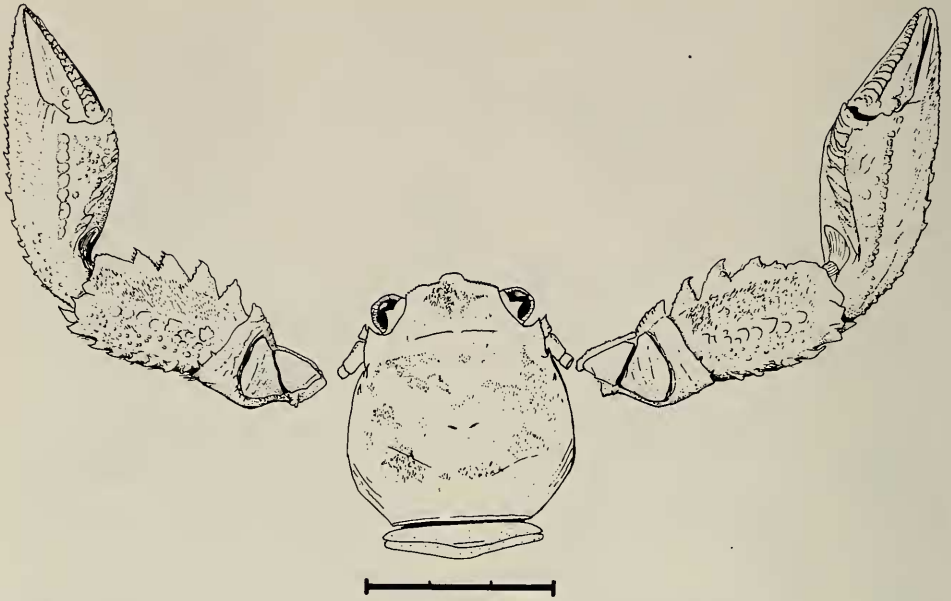


Fig. 3. *Petrolisthes dissimulatus*, Benedict's specimen, paratype female, Playa de Ponce, Puerto Rico; USNM 42351. Scale line = 3 mm.

ond pair (rarely 3), more closely spaced, often extremely sharp or needlelike on anteroventral margin; article pubescence sparse but produced into several long tufts on posterior margin; carpus about  $1.4 \times$  longer than wide, covered dorsally with very low, rounded granules scarcely raised from surface of article, plus isolated raised tubercles interspersed throughout, all often obscured by thick, fine pubescence; anterior margin bearing 4 strong, serrated, distinctly curved teeth which decrease in size distally, and having spinelike or needlelike tips; prominent medial longitudinal ridge formed by irregular row of large, flattened tubercles extends to medial distal margin, many of these tubercles carrying fanlike row of simple setae; posterior margin with series of 6–11 elongate, raised, ridgelike setose rugae, those proximally ending in single, thin, upright spine pointing dorsally, those more distally becoming wider, increasingly horizontal in orientation, that of distalmost extension at posterodistal angle a single, strongly curved spine; another smaller spine adjacent on posterodorsal medial lobe; manus broad, flattened, with low granules nearly obscured by fine pubescence as on carpus; longitudinal crest of enlarged, flattened tubercles on upper quarter of outer surface, extending from dactylar to carpal junctions, second row, more elongated and flattened, defining proximal upper margin, both rows forming oblique isocetes triangle; ventral margin of hand a combination of small, conical teeth or crenulate tubercles in irregular double row to tip of fixed finger; another single row defines anterior cutting edge of latter, becoming completely smooth at finger base; gape interiorly with thick tuft of pubescence; movable finger trihedral, upper margin defined by a longitudinal row of enlarged, adpressed or imbricate teeth, coupled with less distinct adjacent second row, both joining that on manus; dactylar tip curved, crossing over interiorly to similarly curved tip of fixed finger; cutting edges of both without noticeable exterior gape.



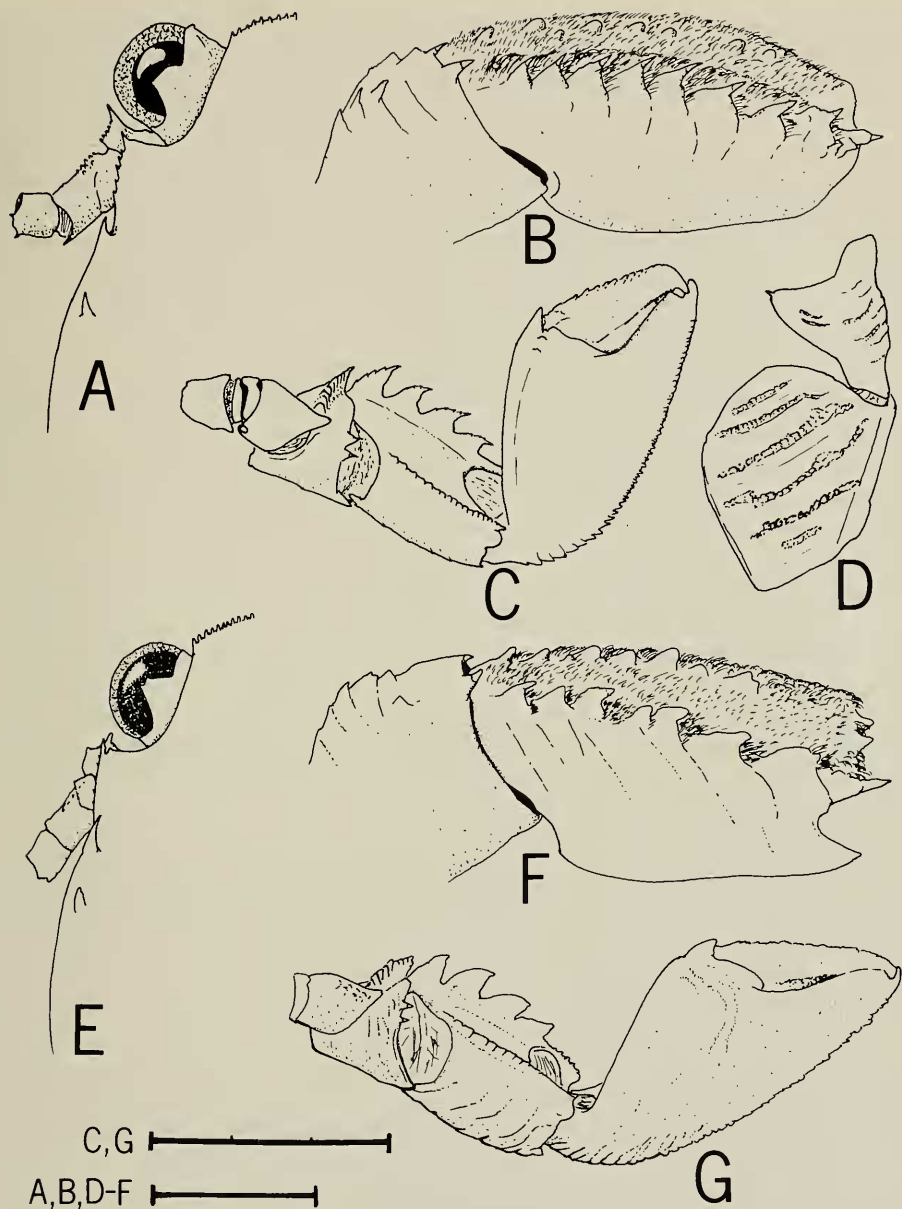


Fig. 4. *Petrolisthes dissimulatus*. A, C, D, Holotype female, USNM 190893; B, Paratype male, St. John's, Virgin Islands, USNM 190894; E-G, Benedict's specimen, paratype female, Playa de Ponce, Puerto Rico; USNM 42351. A, E, Epibranchial and lateral margin of carapace, showing spination; B, F, Right cheliped, posteroventral view of marginal spines; C, G, Left cheliped, mesioventral view; note double meral spines; D, Left maxilliped 3. Scale A, B, D, F = 1 mm; C, G, = 3 mm.

Walking legs smooth to faintly rugose; anterior margin of meri with many fine plumose hairs, these less numerous on carpus, all segments with scattered long, non-plumose setae; anterior margins of meri variably spined, that of first and second with 5–9, third with 3–4 (rarely 7) sharp, curved spinules; posterodistal angle of legs 1 and 2 produced into single, occasionally double tooth, third unarmed; distal dorsal margin of carpi with single strong tooth or spine; propodi with 2 widely-spaced ventral spines, stronger pair or triad at distoventral margin; dactyls with 3 accessory spinules nearly equal in length to each other, subequal to dactylar tip; ventral bases of all pereopods with sharp spinule posteriorly, best seen in individuals having autotomized appendages. Telson with 7 plates.

*Variations.*—The most consistent variation was in the sharpness of spines and spinules. On the meri and carpi of the chelipeds this ranged from distinctly curved and needlelike, to merely acute, to somewhat blunt. Signs of wear and breakage were often seen. Although the epibranchial spines were usually acute, in several instances the second and smaller spine was less sharp, often blunt, or appearing as a nub, quite difficult to discern in the surrounding pubescence. Some variation was also seen in the pilosity on the carapace and chelipeds but is probably attributable to wear and exigencies of long years of preservation.

*Color.*—All specimens had faded in alcohol to creamy white. According to Benedict (1901) his specimen was pink when first examined. Schmitt (1924b) stated that Barbadoan specimens in alcohol were salmon pink, marked with reddish flecks along the margins and tubercles of the chelipeds, and with red bands on the carpus and propodus of the walking legs.

*Ecology.*—The species has been collected from littoral and shallow sublittoral coralline rubble and rocky habitats associated with coral reefs. Oviparous females are known only from April and May.

*Distribution.*—The Caribbean Sea; the Antilles from Puerto Rico, the Virgin Islands, Barbados, and Curaçao; Colombia from Santa Marta and Islas Rosario.

*Relationships.*—*Petrolisthes dissimulatus* exhibits some relationship to several western Atlantic or eastern Pacific porcellanids. It superficially resembles the Caribbean species *Petrolisthes amoenus* (Guérin) in general carapace shape and cheliped morphology and armature, but differs in lacking a supraocular spine and the smaller spinules on the lateral margins of the carapace seen in *P. amoenus*. *Petrolisthes amoenus* is also less pubescent, and does not exhibit the distinctive granular ridges on the upper outer quarter of the manus. The new species bears a close resemblance to what may be its eastern Pacific geminate species, *Petrolisthes hirtispinosus* Lockington, 1878. Both possess granular ridges on the manus, but *P. dissimulatus* can be easily distinguished from *P. hirtispinosus* (and *P. amoenus* as well) by the double epibranchial spines, and the truncate, nearly transverse frontal margin. The new species also shows a general resemblance to *Petrolisthes monodi* Chace, 1956, a somewhat variable species from northwestern Africa, but can be separated using the characters previously delineated for distinguishing it from New World relatives.

*Etymology.*—The specific epithet is Latin, meaning feigned, disguised, or hidden, and refers to the fact that the new species was confused with *P. marginatus* for so many years.

*Discussion.*—Five morphological characters were emphasized both in Stimpson's original description of *P. marginatus*, and in Benedict's description and

illustration of what is now *P. dissimulatus*. These are 1) the shape and prominence of the frontal region, 2) the shape and size of the cheliped carpal teeth, 3) the presence of a ridge on the upper surface of the manus, 4) the color of the specimens, and 5) the overall size of the material at hand.

According to Stimpson, in *P. marginatus* the median lobe of the front is prominent, the four teeth on the anterior margin of the cheliped carpus are equal-sized and very sharp, the ridge extending from the anterior angle of the carpus to the inner base of the finger on the chelipeds is of moderate prominence, the color of the species was deep purplish-crimson, and the carapace length was "about half an inch" [ca. 12 mm].

In Benedict's description and illustration the outline of the front from the median lobe to the angle of the orbit is straight, the cheliped carpus bears four sharp marginal teeth which decrease in size distally, a granular ridge extends from the gape of the fingers to the anterior edge of the carpus, the color of the specimen was pink, and the carapace length of the illustrated specimen is approximately 4 mm, based on a listed magnification of  $3\frac{1}{2}\times$ . The female specimen of *P. dissimulatus* from Playa de Ponce (USNM 42351) is  $3.9 \times 3.6$  mm and agrees with the figured specimen not only in general measurements, but also in carapace and cheliped morphology, even down to the damaged distalmost marginal tooth on the right cheliped, and is thus the specimen Benedict studied (see Figs. 2, 3, 4).

Although *P. dissimulatus* agrees in a very general way with Stimpson's original description of *P. marginatus*, when the two forms are placed side by side the differences are immediately seen (compare Figs. 1 and 4 herein). For example, in *P. marginatus* the median lobe of the front is always quite prominent and much narrower than that of *P. dissimulatus*. The lateral margins of the front slope more or less obliquely backward to the inner orbital angle in *P. marginatus* whereas in *P. dissimulatus* they are nearly transverse or "straight" as noted by Benedict (1901) and Schmitt (1935). The cheliped carpal teeth in *P. marginatus* are sharply pointed, equal-sized or nearly so, or diminish only gradually in size. In *P. dissimulatus* these same teeth are not only sharply pointed but may have needlelike tips which curve distally, and the teeth decrease rapidly in size. The granular ridge on the upper surface of the manus is about the same in both species, but is slightly less prominent in *P. marginatus* than *P. dissimulatus*.

Beginning with Stimpson (1859), many authors (Young 1900; Chace 1956; Haig 1956; Holthuis and Manning 1970; Gore 1974; Werding 1977) have alluded to the often striking hues of purple, crimson or Van Dyke red in *P. marginatus* (and as *P. cessacii*). Unfortunately, there are no references to color for *P. dissimulatus* other than Benedict's or Schmitt's brief notes mentioned above. At present it seems likely that *P. dissimulatus* is probably red, with banded red and white walking legs, and thus slightly different in color from *P. marginatus*.

The two species are also distinguishable in size. Recall that Stimpson's specimen was about 12 mm cl, and *P. marginatus* can grow to nearly 18 mm cl (based on a molted carapace from Isla Aves, Venezuela; Manning in litt.). Oviparous females range from 7–12.6 mm cl in West Africa (Chace 1956; Holthuis and Manning 1970), and 9.5–17.5 mm cl in the Caribbean region (Gore 1974, unpublished data). On the other hand, *P. dissimulatus* apparently does not grow larger than about 6.5 mm cl, and oviparous females range from 3.9–5.7 mm cl, so that the species is clearly smaller than *P. marginatus*.



Finally, *P. dissimulatus* is quickly distinguished not only from *P. marginatus*, but from all other porcellanids in the western Atlantic Ocean with the exception of *Petrolisthes rosariensis* Werding, 1977, by the presence of double epibranchial spines. In *P. marginatus* an extremely small nub of a second spine, more like an enlarged tubercle than a spine or spinule, may occasionally occur behind one epibranchial spine or the other, but this remains the exception not the rule. Moreover, *P. rosariensis* is easily separated because its chelipeds and carapace are covered with transverse piliferous rugae much as in *P. galathinus*, to which it is closely related. Neither *P. dissimulatus* nor *P. marginatus* has transverse piliferous rugae anywhere on the carapace or chelipeds.

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